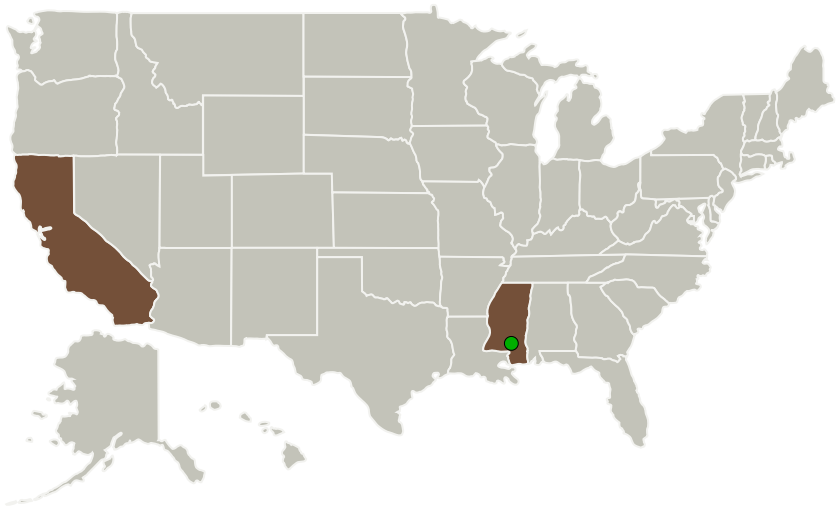
Distributed Rocket Engine Testing Health Monitoring System, Phase II

Completed Technology Project (2010 - 2012)

Project Introduction

Leveraging the Phase I achievements of the Distributed Rocket Engine Testing Health Monitoring System (DiRETHMS) including its software toolsets and system building blocks, the Phase II project seeks a comprehensive prototyping of the technology. Phase II not only expands the functionality and applications of the Phase I achievements, but utilizes evolving diagnostics due to the advanced intelligent algorithms built on AGNC's Optimized Neuro-Genetic Fast Estimator (ONGFE) framework. In this way, the Phase II effort culminates in a product that is able to adapt to unknown operating conditions and learn new failures in an unsupervised way. Additionally, a major effort consists of providing a novel, robust, and embedded software toolset for sensor Failure Detection and Identification (FDI): Sensor Data Validation and Self-Healing Scheme (SDV-SHS). To increase the commercialization potential and market values of the NASA and non-NASA applications, the Phase II project adapts DiRETHMS to the market requirements. The work in Phase II along with a modular architecture and standardization ensures a solid integration with NASA's Integrated System Health Management (ISHM) for enhanced health monitoring.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
American GNC Corporation	Lead Organization	Industry Small Disadvantaged Business (SDB), Women-Owned Small Business (WOSB)	Simi Valley, California
Stennis Space Center(SSC)	Supporting Organization	NASA Center	Stennis Space Center, Mississippi

Primary U.S. Work Locations	
California	Mississippi

Project Transitions

January 2010: Project Start

January 2012: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138945)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

American GNC Corporation

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

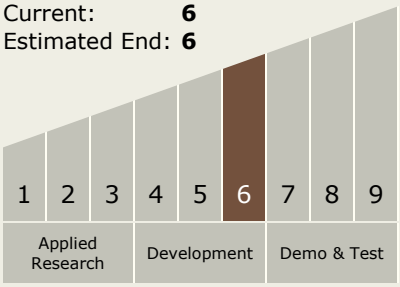
Carlos Torrez

Principal Investigator:

Tasso Politopoulos

Technology Maturity (TRL)

Start: **6**
Current: **6**
Estimated End: **6**



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Technology Areas

Primary:

- TX13 Ground, Test, and Surface Systems
  - TX13.4 Mission Success Technologies
    - TX13.4.5 Operations, Health and Maintenance for Ground and Surface Systems

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System